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# Interactive communication for a shared city

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## Synopsis

The main objective of the DATA project<sup>1</sup> (Developing Abandoned Transurban Areas), is to identify innovative strategies to regenerate abandoned areas in the City of Padua in accordance with guidelines in Veneto Regional Law 6.6.2017 on containing land consumption. The research places particular emphasis on creating mechanisms capable of giving new life to disused transurban areas by acting on the urban fabric situated at the city margins (Fig.1, Fig.2). To be able to address the different themes and develop concrete proposals, the research was divided into six complementary areas: “Web GIS”, “BIM and land information modelling”, “Pilot scenario design”, “Urban planning”, “Waste recycling”, and “Data management and ICT” (Fig.3). In particular the present article investigates the last area regarding the interoperability of data and communication.

**Key words:** Periphery, transformation, multi-level communication, interaction.

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<sup>1</sup> DATA project: University of Padua: Civil, environmental and architectural engineering. Financing: Veneto Region; European Social Fund POR FSE 2014-2020. Prof: L. Stendardo (P.I.), M. De Marchi, A. Giordano, M.C. Lavagnolo, M. Savino.





Figure 1.



Figure 2.



Figure 3.

## 1. State of the art<sup>2</sup>

With regard to the state of the art, two distinct, complementary areas are analyzed: i) the management and systematization of data and ii) communication, visualization, and ICT.

For the first area i), among numerous existing case studies, the analysis concentrates in particular on those presented in session 6 at the INU Napoli 2017 10th Study Day—‘New computer technologies for the territory’. During the conference, the most recent research regarding urban regeneration was examined, in particular the representation of the territory.

With regard to the second area ii), two of the many case studies investigated were selected<sup>3</sup>, in particular those characterized by the use of interactive modalities:

The ‘Sensitive City’ (Studio Azzurro, Shanghai 2010): Life-size figures projected on a vertical surface, the storytellers, pass by the visitors who can invite them to speak by raising their hand; and ‘You are not Here’ (NYC 2006): This installation invites participants to become meta-tourists, simultaneously visiting multiple cities simply by using a downloadable paper map and a smartphone.

## 2. Structure of the project: ICT and multimodal interaction

The entire structure of the DATA project is based on multidirectional connections between the six areas previously mentioned. As an example: the 3D BIM modelling of the city is directly connected to GIS buildings information and the Design is directly connected to the ICT that allows the communication of the architectural scenarios created. In the present paragraph, the sixth area is investigated.

“Whilst we only remember ten percent of what we read, we remember ninety percent of what we do”<sup>4</sup>. “The association of virtual information with multimodal sensory experiences creates a new layer of knowledge. Making virtual information tangible, even in the virtual environment, makes the information more accessible and enhances knowledge transfer”<sup>5</sup>. In this view, in the course of the present research, the experimentation was directed at immersive and interactive output aimed at creating a flexible cultural network. The work aims to reevaluate the concept of regeneration by creating a direct communication channel between people and city processes. Only flexible, multi-level communication is able to interpret the character of these complex, dense areas of overlapping realities. Toward personalized outputs, customizable maps and a searchable database an effective and updated interaction is achieved.

In what follows, different types of proposed output are analyzed:

-Video Intro: This output consists of a promotional video that presents an exploratory itinerary of the urban landscape. Like the trailer adopted in

<sup>2</sup> Paragraphs: Synopsis: Luigi Stendardo; State of the Art, Structure and Conclusion: Giulia Pettoello.

<sup>3</sup> J.Allen, E. Lupo, *ibid*.

<sup>4</sup> F.Cameron, S. Kenderdine. *Op.cit.* P.143.

<sup>5</sup> *Ivi* P.371.

cinematography, the video narrates an extremely synthesized history and story, using a few images, sounds, and words (Fig.4).

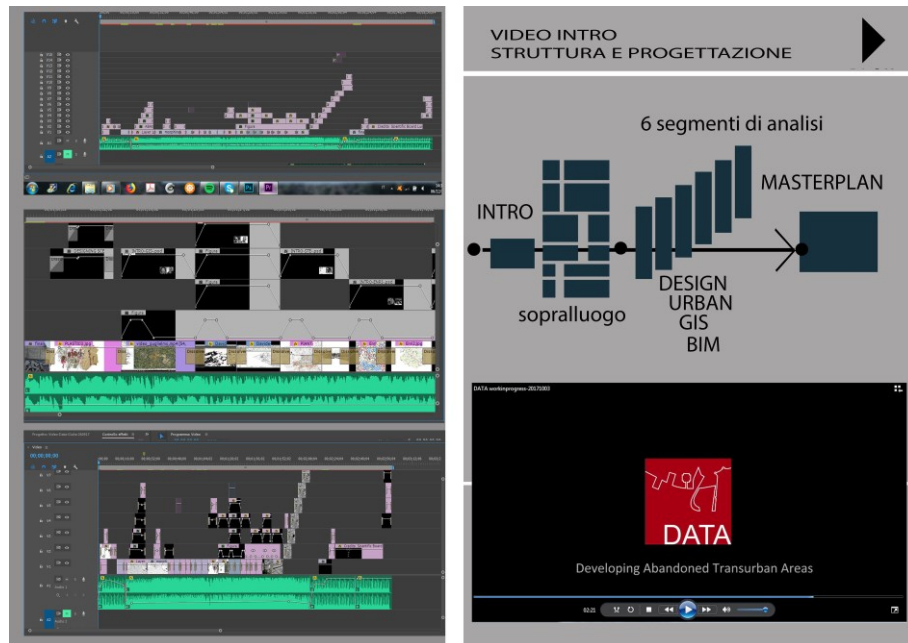


Figure 4.

- Web Platform: The project entails the creation of a web platform, to make possible the interoperability of various data both collected and produced over the course of the work. Using the platform, which is based on the MySQL database, it is possible to connect directly to the GIS world created thanks to the use of Geonode which is based on the Postgres database, thereby accessing the multilevel-urban-maps created. The objective of the system is twofold: an ordered archive of the data and the creation of a "query user-friendly" mode to rapidly explore and use any content (Fig.5).

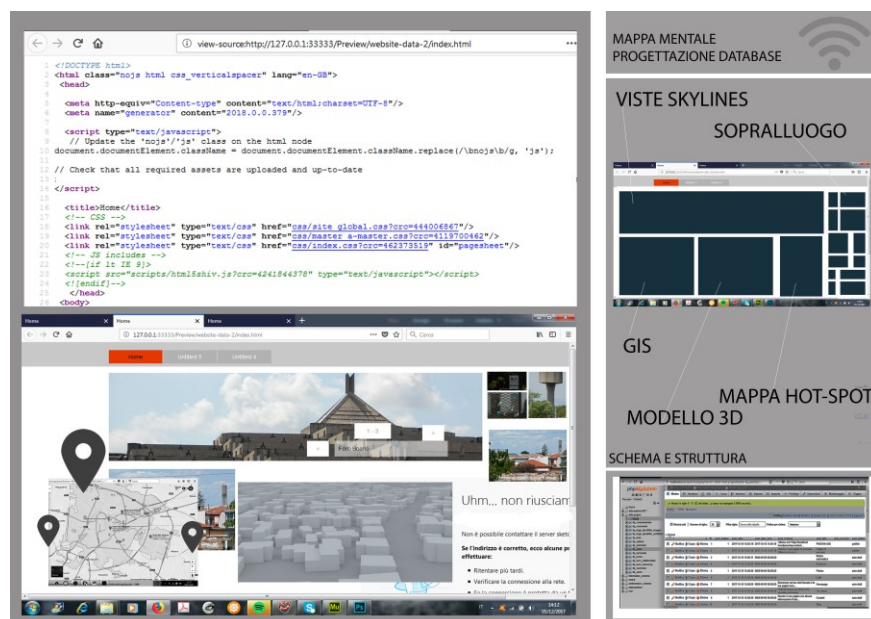


Figure 5.

- VR-explorable model: This output consists in reconstructing the urban landscape in the use of which the user plays an active role. The exploration of space (3D urban model) in real time allows the user to be arbitrarily free: pre-established fixed flow exploration<sup>6</sup> is replaced by personalized and instinctive random flow exploration. With the 3D visor, the user can activate and access future project scenarios on the model of the city in real time (Fig.6, Fig.7).

-App for tablets: This application presents a 360° model of the city, but in this case, in contrast to the model explored with the visor, greater space is given to the possibility of real-time access to historical information and descriptions related to the architectural design.

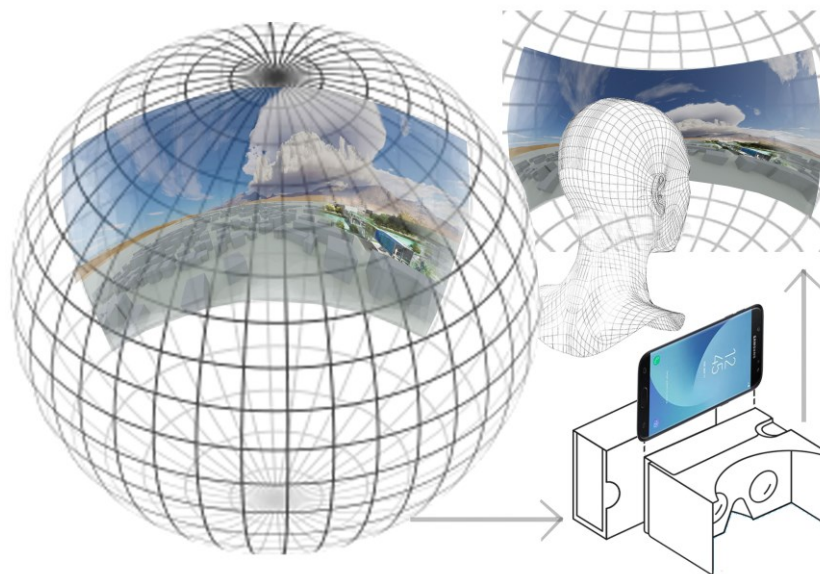


Figure 6.

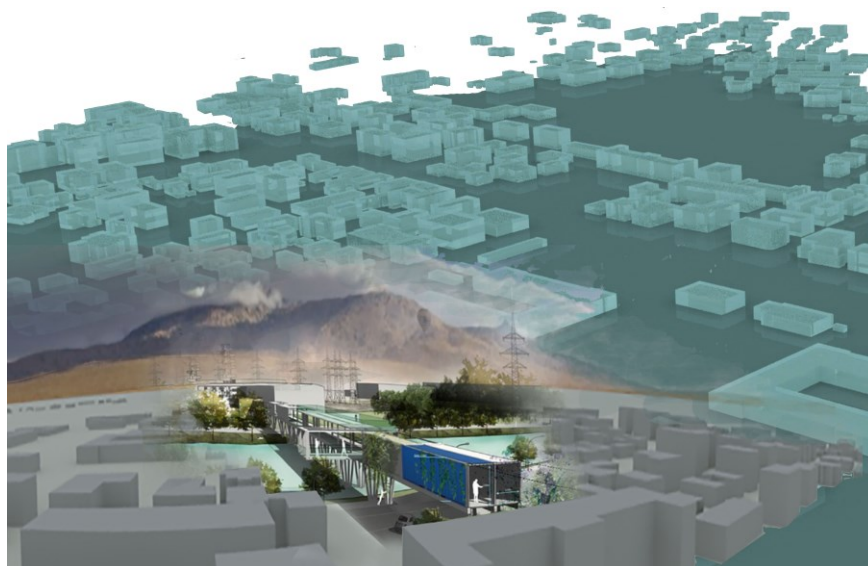


Figure 7.

<sup>6</sup> Credits Fig. 7: VR G.Pettoello –3D: D. Barbato – Image content: Architectural Project: Workshop of Architectural and Urban Design 2017 "The Canal of Babel" professors: L.Stendardo (supervisor), L.Siviero, S. Antoniadis. Students: Marco Barison, Arancha Garcia-Quijada Garcia, Giada Pozzato, Sarah Reverenna. Location: segmento di Granze di Camin, Padua.



### 3. Conclusion

The goal was to construct a methodology capable of reading and investigating the urban fabric to develop a proposal for planning visions and scenarios for regeneration. Beyond presenting concrete proposals for the City of Padua, the goal was also to create a method characterized by the use of open-source technologies that could be adapted to any other situation responding to the extremely widespread problem regarding the disuse of marginal metropolitan areas (Fig.8).

In the research, reference is also made to the objectives of the "Cultural Heritage Platform", with particular regard for the goals established in the Horizon 2020 projects in Reflective 7 "Advanced 3D modelling for accessing European cultural assets". Focus is placed on research and the development of methods to represent and analyze the built environment, without pausing on a simple digital reconstruction. The aim is also to create an innovative, dynamic communication project capable of attracting the interest of different stakeholders and citizens, and therefore to give rise to a process of open, shared communication. The DATA research therefore aims to develop a theoretical and practical method to manage and communicate critical models of transurban areas that are particularly complex and hold enormous potential.

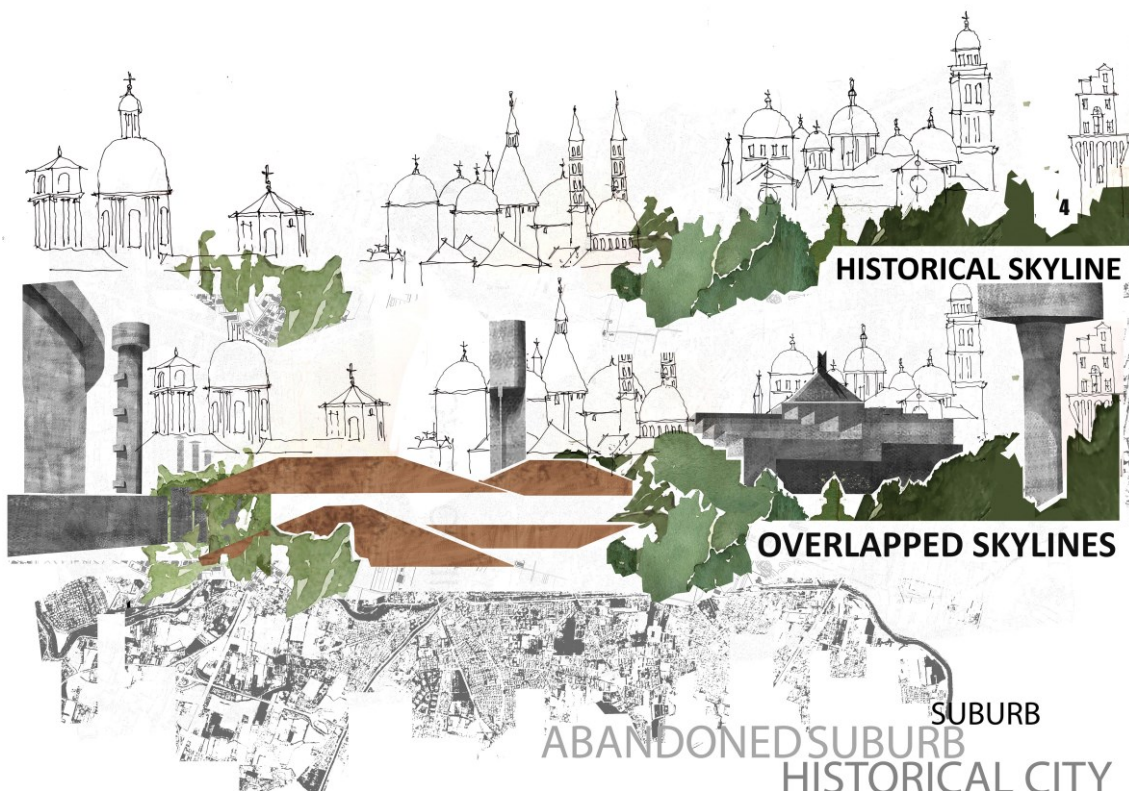


Figure 8.



#### 4. Bibliography

CASTI, Emanuela, 2014. Aree dismesse e obsolete in Lombardia. Rapporto I fase di ricerca del progetto Rifo/lt. Rigenerazione urbana e restituzione del suolo. DiathesisLab, Università degli Studi di Bergamo.

SACCHI, Livio and UNALI Maurizio, 2003. Architettura e cultura digitale, Milano, Skira. EAN 9788884914088.

MANOVICH ,Lev, 2008. Il linguaggio dei nuovi media, Milano, Olivares. ISBN 978-8885982611.

ALLEN, Jamie, ELEONORA Lupo, Representing Museum Technologies, MelaBooks/Politecnico di Milano. 2012 ISBN 9788895194288.

CAMERON, Fiona and KENDERDINE Sarah 2010. Teorizing Digital Cultural Heritage. London: The MIT Press. ISBN: 9780262514118.

ANTINUCCI, Francesco, 2009. L'algoritmo al potere, Vita quotidiana ai tempi di Google, Laterza, Roma. EAN 9788842090533.

## Biography

**Giulia Pettoello.** Architect and researcher at the DSDRA (Department of History, Representation and Restoration of Architecture) at the Sapienza University of Rome. She graduated with honours at the Sapienza University of Rome in 2012 and studied at the Polytechnic University of Valencia in Spain through the ERASMUS Program. In 2012 she registered with the Association of Architects in Rome. In 2014 she completed a three months internship at the Duke University in North Carolina U.S.A. In 2016 she obtained a PhD in Sciences of Representation and Survey at the Department DSDRA at Sapienza University of Rome with a thesis entitled: "Mutable Museum: digital for the enhancement of cultural heritage". Currently she is a research fellow, specialized in data management and ICT, in the project "DATA: Developing Abandoned Transurban areas" which is being held in Padua's University: DICEA (Department of Civil, Architectural and Environmental Engineering).